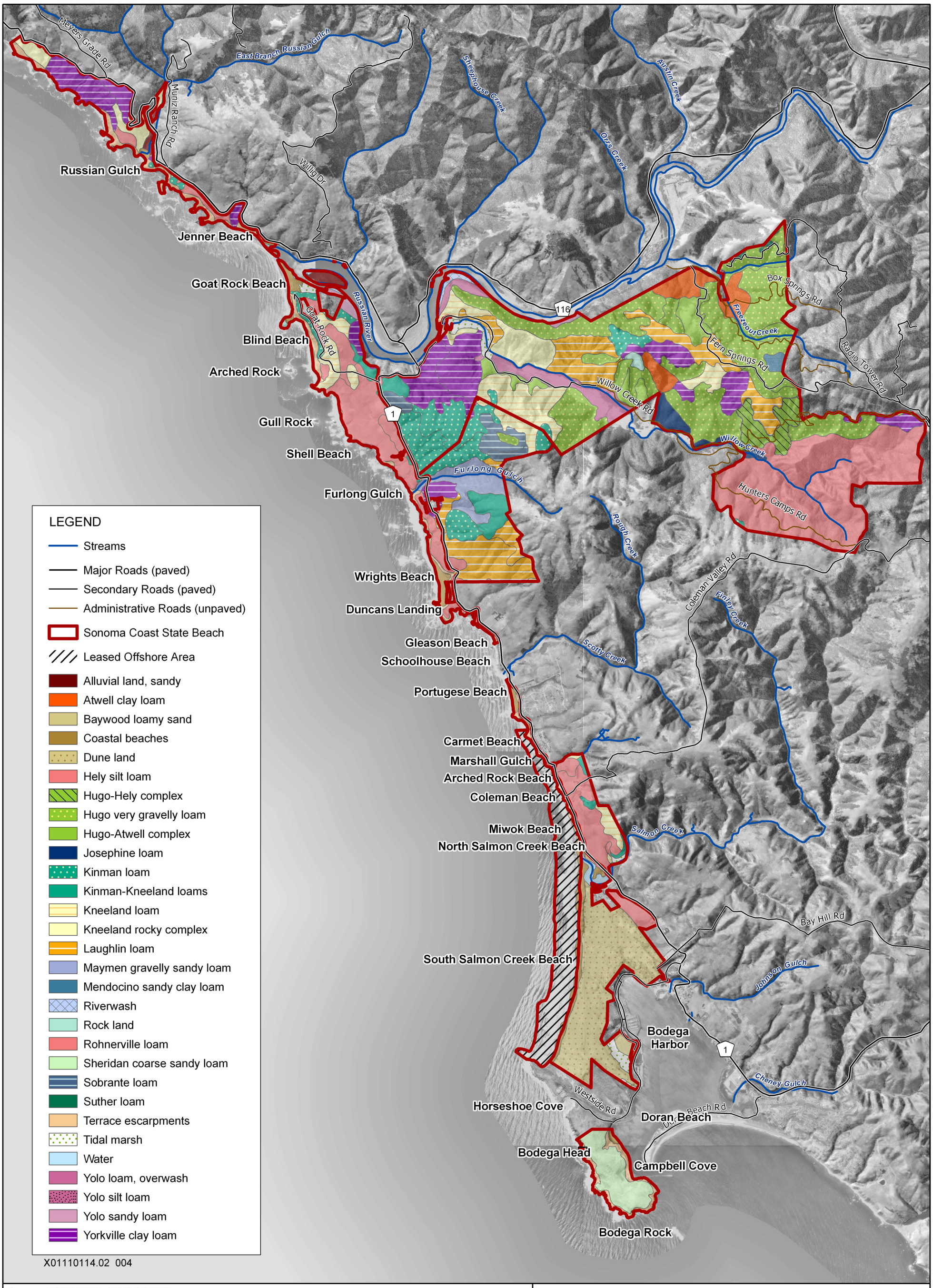


Source: USDA 2003, SSURGO 2005

N

1 inch = 1 mile

0 4000 8000

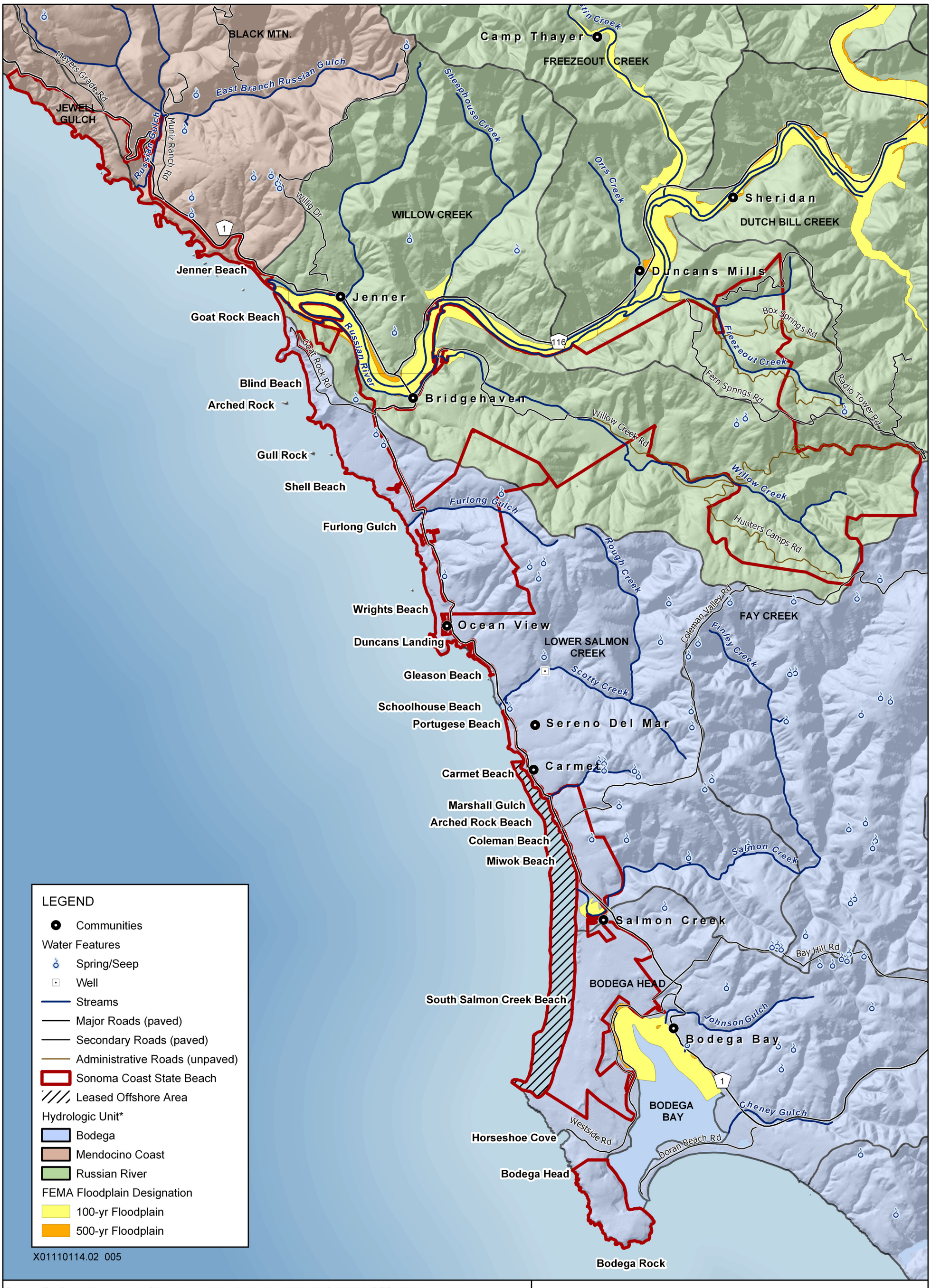
Feet

Dec 20, 2006

EDAW

Sonoma Coast State Beach

Exhibit 2-4
Soil Types


BLACK MTN.
Meyers Grade Rd
JEWELL GULCH
Russian Gulch
Muniz Ranch Rd
East Branch Russian Gulch
Willig Dr
1
Jenner Beach
Jenner
Goat Rock Beach
Goat Rock Rd
Russian River
Blind Beach
Arched Rock
Gull Rock
Shell Beach
Furlong Gulch
Furlong Gulch
Wrights Beach
Ocean View
Duncans Landing
Gleason Beach
Schoolhouse Beach
Portugese Beach
Carmet
Carmet Beach
Marshall Gulch
Arched Rock Beach
Coleman Beach
Miwok Beach
Camp Thayer
FREEZEOUT CREEK
Sheephouse Creek
Orris Creek
WILLOW CREEK
Sheridan
DUTCH BILL CREEK
Duncans Mills
116
Box Springs Rd
Freezeout Creek
Fern Springs Rd
Radio Tower Rd
Willow Creek Rd
Willow Creek
Hunters Camps Rd
Rough Creek
Coleman Valley Rd
FAY CREEK
Finley Creek
LOWER SALMON CREEK
Scotty Creek
Sereno Del Mar
Salmon Creek
Salmon Creek
Bridgehaven
Bay Hill Rd
BODEGA HEAD
South Salmon Creek Beach
Johnson Gulch
Bodega Bay
BODEGA BAY
Cheney Gulch
Westside Rd
Doran Beach Rd
Horseshoe Cove
Bodega Head
Bodega Rock
LEGEND
Communities
Water Features
Spring/Seep
Well
Streams
Major Roads (paved)
Secondary Roads (paved)
Administrative Roads (unpaved)
Sonoma Coast State Beach
Leased Offshore Area
Hydrologic Unit*
Bodega
Mendocino Coast
Russian River
FEMA Floodplain Designation
100-yr Floodplain
500-yr Floodplain
X01110114.02 005
Source: California Department of Forestry and Fire Protection 1999, DFG 1999, USGS 1997
N
1 inch = 1 mile
0
4000
8000
Feet
* Each Hydrologic Unit is subdivided into Planning Watersheds. The Planning Watershed names appear on the map.
Dec 22, 2006
EDAW
Sonoma Coast State Beach
Exhibit 2-5
Surface Hydrology

Beach for 2 days during 2002. The causes of health standard exceedance were unknown; however, wildlife sources are suspected at Campbell Cove, and Salmon Creek is suspected to be the source at Salmon Creek beach (County of Sonoma Division of Environmental Health 2002). The posting of warning signs alerts the public of a possible risk of illness associated with water contact. The State Water Resources Control Board is cooperating with other agencies on a study to identify the sources and management strategies for control of fecal bacteria at Campbell Cove Beach and in Bodega Bay (SWRCB 2003).

BIOTIC RESOURCES

A biological resource is significant if it:

- is important to the essential character of Sonoma Coast SB, and contributes, in part, to its statewide significance;
- is regionally significant, is an important component of a systemwide plan, or contributes to the preservation of regional or statewide biodiversity; or
- is documented as significant on recognized preservation or protection lists or otherwise designated with special status by a recognized authority.

Significant biotic resources in the General Plan study area were determined through a review of available documentation and consultation with biologists familiar with the local biological resources. Sources of information also include DPR's condition assessment for Sonoma Coast SB (DPR 2001d), the Department's internal database (Cal Flora and Fauna), the California Department of Fish and Game's California Natural Diversity Database (CNDDB 2002), the California Native Plant Society's (CNPS) Electronic Inventory of Rare and Endangered Plants of California (CNPS 2002), and a number of documents on file with the Department, as listed in Chapter 5, References.

Regulatory Background

Many biological resources in California are protected and/or regulated by laws, regulations, and policies. Key regulatory compliance issues that may need to be addressed before implementation of the General Plan are listed below. A brief description of each of the applicable laws and regulations is provided in Appendix C.

- Federal Endangered Species Act
- Marine Mammal Protection Act
- Clean Water Act
- California Endangered Species Act
- California Coastal Act
- §1602 of the California Fish and Game Code
- §3503.5 of the California Fish and Game Code
- Migratory Bird Treaty Act

Plant Life

This section contains a description of plant communities that characterize Sonoma Coast SB. Special-status plant species known or with potential to occur at Sonoma Coast SB and sensitive habitats are described as well. Finally, invasive, non-native plants that are particularly problematic at Sonoma Coast SB are discussed.

Plant Communities

In previous studies of Sonoma Coast SB, biologists have mapped plant communities using nomenclature and descriptions derived from the vegetation classifications of Holland (1986) and Sawyer and Keeler-Wolf and wetland classification of Cowardin (1979). The Department has since adopted the California Manual of Vegetation of Sawyer and Keeler-Wolf as its vegetation classification system. Therefore, plant community descriptions for Sonoma Coast SB are presented according to this classification wherever possible. In some cases, previously described vegetation types from other studies were grouped because they are not readily distinguishable in the field or on aerial photographs. In the case of coastal prairie and coastal dune vegetation, it was not possible to apply Sawyer and Keeler-Wolf categories because the level of detail required to do so was beyond the scale of the general botanical surveys and overview vegetation mapping that are part of this planning effort. The following plant communities are present in the General Plan study area:

- Arroyo willow series
- Bulrush–cattail series
- California bay series
- California annual grassland series
- Coastal dunes
- Coastal prairie
- Coyote brush series
- Douglas-fir series
- Douglas-fir–tanoak series
- Dune lupine–goldenbush series
- Eucalyptus series
- European beachgrass series
- Iceplant series
- Landscaped areas
- Mixed willow series
- Red alder series
- Redwood series
- Sand verbena–beach bursage series
- Sedge series
- Yellow bush lupine series

These plant communities are described below in alphabetical order. A map of existing plant communities was produced from reconnaissance-level field surveys and aerial photograph interpretation (Exhibit 2-6).

Arroyo Willow Series

This riparian scrub community occurs in and along drainage channels and other seasonally saturated or flooded areas at Sonoma Coast SB. This riparian scrub community can occur as a mono-specific stand of arroyo willow (*Salix lasiolepis*) or include other shrub or tree species.

For example, some portions of this series at Bodega Head are dominated by wax-myrtle (*Myrica californica*), which lacks its own series in the Keeler and Sawyer-Wolf classification. The understory varies from sparse to abundant and is generally composed of herbaceous wetland species.

Bulrush–Cattail Series

This freshwater marsh plant community occurs at the mouth of Willow Creek near its confluence with the Russian River and around the "Hole in the Head" at Bodega Head. It is dominated by emergent herbaceous plants including cattails (*Typha* spp.) and spike rush (*Eleocharis macrostachya*, also called bulrush) as well as other wetland species such as basket sedge (*Carex obnupta*), water plantain (*Alisma platago-aquatica*), and rushes (*Juncus effusus*, *J. patens*), horsetails (*Equisetum* spp.), and three square (*Scirpus pungens*). This wetland plant community occurs only in areas that are permanently flooded and qualifies as a wetland community protected under §404 of the CWA. It may also occur in roadside ditches scattered throughout Sonoma Coast SB.

California Bay Series

California bay forest occurs on moist, exposed ridges and stream margins in the Willow Creek Subunit. California bay (*Umbellularia californica*) is the sole dominant tree in the dense canopy, and there are few understory shrubs and herbs. This plant community merges with Douglas-fir–tanoak series, which is described below.

California Annual Grassland Series

This grassland plant community characterizes areas of Sonoma Coast SB that have been disturbed in the past. The native vegetation in these areas has been altered for the purpose of conversion to various land uses including farming, grazing, homesteading, and logging.

Once these land uses cease and the land is left fallow, it typically becomes dominated by introduced grasses and forbs. On coastal terraces, which formerly supported coastal prairie vegetation, California annual grassland series may contain scattered patches of perennial grasses. Non-native grass species that now dominate disturbed terraces include wild oats (*Avena* spp.), bromes (*Bromus* spp.), Italian ryegrass (*Lolium multiflorum*), velvet grass (*Holcus lanatus*), and canarygrass (*Phalaris aquatica*), which were introduced into California

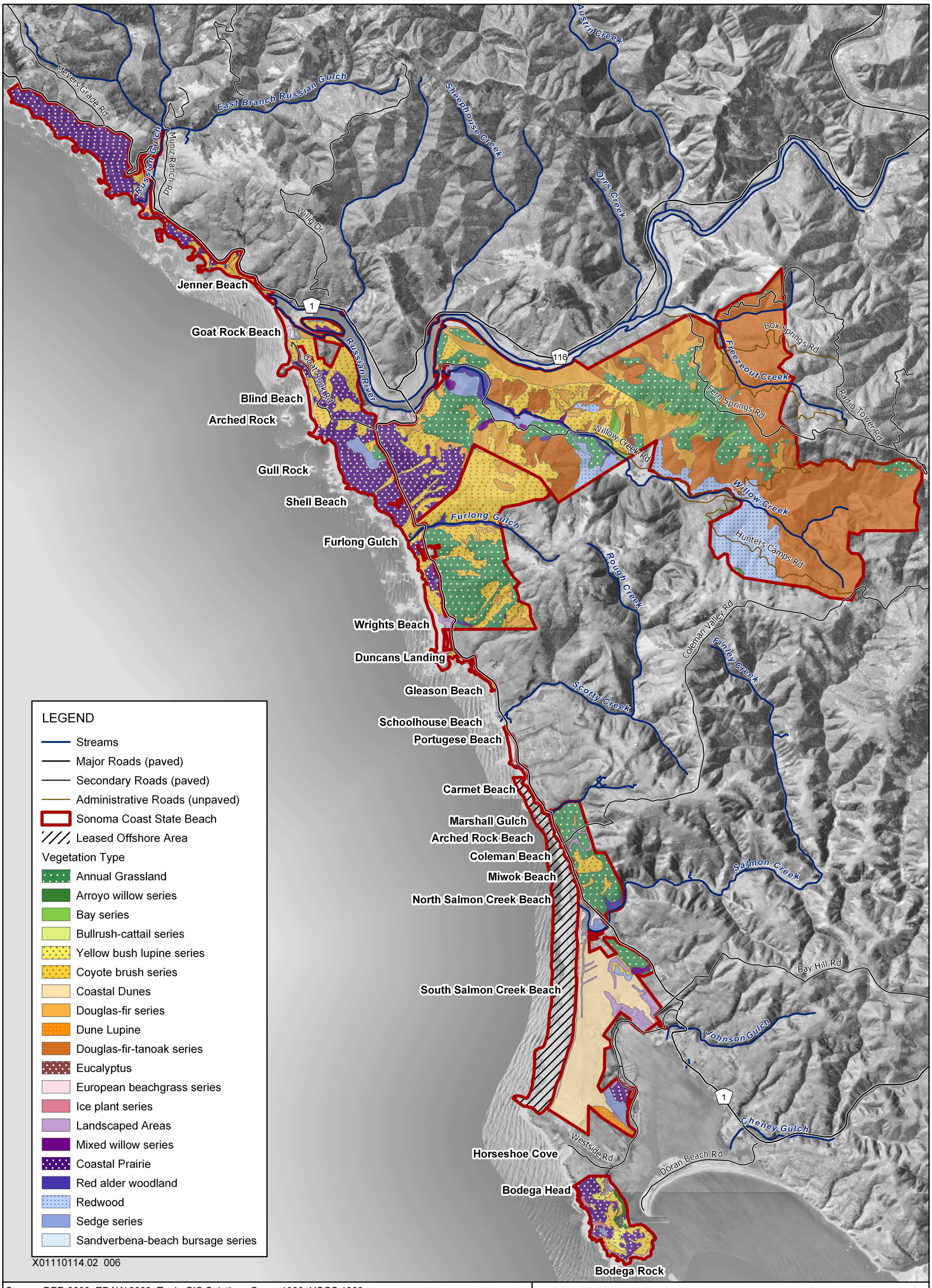
intentionally for livestock forage. Non-native, weedy forbs include wild radish (*Raphanus sativa*), bull thistle (*Cirsium vulgare*), milk thistle (*Silybum marianum*), English plantain (*Plantago lanceolata*), and filaree (*Erodium* spp.). California annual grassland series also occurs in open areas on the slopes above coastal terraces as well as openings in forested areas. Native forbs such as Douglas iris (*Iris douglasiana*), cow parsnip (*Heracleum lanatum*), yarrow (*Achillea millefolium*), California buttercup (*Ranunculus californicus*), California poppy (*Eschscholzia californica*), and blue-eyed grass (*Sisyrinchium bellum*) are also a common component of the dominant vegetation. Because of the level of mapping, the distinction between this vegetation series and coastal prairie was difficult to make. Therefore, most of the grassland vegetation on coastal terraces is mapped as coastal prairie, which is described below, and ruderal areas clearly dominated by non-native grasses are mapped as California annual grassland.

Coastal Dunes

Because of the broad level of vegetation mapping, it was not feasible to map vegetation series in coastal dunes using the Sawyer and Keeler-Wolf classification. Extensive coastal dune habitat is located in the southern end of Sonoma Coast SB at Bodega Dunes. Coastal dune plant communities are located above the high tide line where sandy beaches and sand dunes occur (Holland and Keil 1995). Coastal dunes are highly dynamic ecosystems that are shaped and influenced by persistent coastal winds. Beaches and active dune areas close to the shoreline are typically barren because of the rapid rate of sand movement. Foredune areas are similar to active coastal dunes but have less wind and/or sand and/or more abundant groundwater, which allows some patches of prostrate, herbaceous plants to establish (Holland 1986). This vegetation generally consists of sand-verbena–beach bursage series, which is described below. Native dunegrass series (areas dominated by *Leymus mollis*) can also occur along the shoreline. Areas of coastal dunes located further away from the immediate shoreline are more sheltered and have become more stabilized. They contain more established vegetation and higher species diversity. Series that occur in these areas include European beachgrass, iceplant, yellow bush lupine, and dune lupine–goldenbush, which are described below.

Coastal Prairie

Coastal prairie, also called coastal terrace prairie, is the prevalent vegetation type on coastal terraces throughout Sonoma Coast SB. As mentioned earlier, assigning Sawyer and Keeler-Wolf series to this vegetation was not possible in the mapping effort because of the overview level of the botanical surveys. However, if more detailed mapping is conducted in the future, the following series could apply to coastal prairie: Pacific reedgrass series, California oatgrass series, introduced perennial grassland series, and tufted hairgrass series. Coastal prairie is dominated by grasses such as purple needlegrass (*Nassella pulchra*), Pacific reedgrass (*Calamagrostis nutkaensis*), California oatgrass (*Danthonia californica*), tufted hairgrass (*Deschampsia cespitosa*), bromes, Italian ryegrass, and velvet grass. Native forbs found in coastal prairie include those described above under California Annual Grassland



Source: DPR 2003, EDAW 2003, Teale GIS Solutions Group 1999, USGS 1993

N

1 inch = 1 mile

0 4000 8000

Feet

Dec 22, 2006

EDAW

Sonoma Coast State Beach

Exhibit 2-6
Plant Communities

Series as well as Pacific cinquefoil (*Potentilla anserina* ssp. *pacifica*, also called silverweed), seaside daisy (*Erigeron glaucus*), beach strawberry (*Fragaria chiloense*), and many-colored lupine (*Lupinus variicolor*). Coastal prairie intergrades with California annual grassland in more disturbed areas and coyote brush series on terraces undergoing succession. In addition, there are scattered wetlands associated with drainages, seeps, or natural depressions in coastal prairie. These patches are dominated by sedges (*Carex* spp.), rushes, and nutsedge (*Cyperus* spp.). Coastal prairie wetlands qualify as wetlands protected under §404 of the CWA.

Coyote Brush Series

Coyote brush series is very common throughout Sonoma Coast SB. It occurs on coastal terraces, hillsides, and bluffs. This broadly circumscribed series includes the coastal bluff scrub and north coastal scrub plant communities described by Holland (1986). This plant community is dominated by coyote brush (*Baccharis pilularis*). In some areas, coyote brush forms an almost continuous layer, whereas other areas are less dense and have an understory composed of a variety of herbaceous species characteristic of the coastal prairie and California annual grassland series.

Although some coastal bluffs at Sonoma Coast SB are bare because of natural erosion, many areas support vegetation. In these areas, coyote brush series is composed mostly of perennial herbs that are tolerant to harsh environmental factors, such as high winds, sand blast, salinity, and little or no soil development, that are typically associated with coastal bluffs. Common associated species on coastal bluffs include grasses as well as coastal buckwheat (*Eriogonum latifolium*), seaside woolly sunflower (*Eriophyllum staechadifolium*), many-colored lupine, iceplant (*Carpobrotus* spp.), beach strawberry, California buttercup, seaside daisy, and yellow bush lupine (*Lupinus arboreus*). Coyote brush series also occurs on other windy, exposed sites such as marine terraces and at the bases of slopes near the coast. Characteristic associated species on more mesic sites include a mix of shrubs such as California coffeeberry (*Rhamnus californicus*), bush lupine, California blackberry (*Rubus ursinus*), sticky monkeyflower (*Mimulus aurantiacus*), and poison oak (*Toxicodendron diversilobum*), as well as herbs including cow parsnip, hedge-nettle (*Stachys ajugoides*), and grasses. In addition, this plant community intergrades with Douglas-fir forest in less exposed areas.

Douglas-fir Series

At Sonoma Coast SB Douglas-fir forest occurs mostly on upper slopes and ridge tops. This plant community is characterized by an open to dense canopy of Douglas-fir (*Pseudotsuga menziesii*). Near the coast, Douglas-fir trees can have a stunted, windswept appearance from prolonged exposure to strong coastal winds. In these areas, an understory is typically absent, and this plant community intergrades with coyote brush series. In less exposed areas, Douglas-fir trees grow much taller and straighter, and an understory is present. Common understory plants include sword fern (*Polystichum munitum*), pink-flowering currant (*Ribes sanguineum*), California figwort (*Scrophularia californica*), twinberry (*Lonicera involucrata*),

California blackberry, coyote brush, and poison oak. On more mesic sites, Douglas-fir series vegetation can include some riparian species such as California bay, California myrtle (*Myrica californica*), red alder (*Alnus rubra*), and willows (*Salix* spp.). In some areas, distinguishing between this plant community and Douglas-fir–tanoak series can become difficult. However, in general, Douglas-fir series has a one-tiered canopy, whereas Douglas-fir–tanoak series typically has a multilayered canopy.

Douglas-fir–Tanoak Series

This forest plant community is dominated by several species of evergreen broadleaved trees and conifers such as California bay, Douglas-fir, coast live oak (*Quercus agrifolia*), madrone (*Arbutus menziesii*), and tanoak (*Lithocarpus densiflorus*). Occasional red alders and willows also occur in this plant community, particularly along Willow Creek. California bay is also commonly found along drainages within the upper Willow Creek watershed. Douglas-fir–tanoak series typically exhibits a well-developed and diverse understory. The shrub layer includes a mix of species such as California buckeye (*Aesculus californica*), silk tassel bush (*Garrya elliptica*), toyon (*Heteromeles arbutifolia*), sticky monkeyflower, pink-flowering currant, oso berry (*Oemleria cerasiformis*), salmonberry (*Rubus spectabilis*), California blackberry, coastal ceanothus (*Ceanothus thyrsiflorus*), coffeeberry, and poison oak. Common herbs in the understory include columbine (*Aquilegia formosa*), bracken fern (*Pteridium aquilinum*), sword fern, milk maids (*Cardamine californica*), wild ginger (*Asarum caudatum*), false solomon's seal (*Smilacina racemosa*), yerba buena (*Satureja douglasii*), and fairy bells (*Disporum hookeri*). Douglas-fir–tanoak series is most well-developed in the Willow Creek area of Sonoma Coast SB and can intergrade with Douglas-fir series on drier sites and California bay series on moister sites.

Dune Lupine–Goldenbush Series

This plant community occurs on stabilized backdune areas at Bodega Dunes. It consists of a relatively dense shrub cover dominated by dune lupine (*Lupinus chamissonis*) and heather goldenbush (*Ericameria ericoides*). The understory is typically composed of herbaceous species found in sand verbena–beach bursage or coyote brush series. Yellow bush lupine and coastal buckwheat are common in this community at Bodega Dunes.

Eucalyptus Series

Eucalyptus trees have been introduced in a few scattered locations at Sonoma Coast SB. In general, the stands are small, isolated, and composed of blue gum (*Eucalyptus globulus*), a tree introduced from Australia. Allelopathic chemicals that are released into the soil from the leaves of eucalyptus species typically prohibit the development of an understory in this plant community. Eucalyptus trees are located on Penny Island, at the Willow Creek Campground, the bayside of Bodega Head, and in a few patches along U.S. 101.

European Beachgrass Series

European beachgrass (*Ammophila arenaria*), a non-native species, was planted in coastal regions of California including the North Coast and Bodega Dunes to stabilize dunes (DPR 2002, Sawyer and Keeler-Wolf 1995). It has become invasive on coastal dunes and beaches in the state, displacing native vegetation. European beachgrass series is characterized by virtually mono-specific stands of European beachgrass. At Sonoma Coast SB, it has displaced native dune vegetation at Bodega Head, Bodega Dunes, South Salmon Creek Beach, and Goat Rock Beach and occurs in association with and sand-verbena–beach bursage series.

Iceplant Series

Iceplant (*Carpobrotus edulis*, *C. chilensis*), a non-native, invasive plant, is particularly extensive on the coastal bluffs in the southern half of Sonoma Coast SB, on the dunes at Goat Rock Beach, and at Duncans Landing. Iceplant was introduced to California for the purpose of erosion control and has since become extremely invasive in coastal areas. Iceplant forms dense mats and eventually chokes out native plant communities. At Sonoma Coast SB, iceplant is encroaching on coyote brush, coastal prairie, and sand-verbena–beach bursage series.

Landscaped Areas

Landscaped areas occur in scattered locations throughout Sonoma Coast SB, especially near residences, campgrounds, and other development. Common plants in landscaped areas include eucalyptus (*Eucalyptus* sp.), myoporum (*Myoporum laetum*), and iceplant (*Carpobrotus cortaderia*) or California native species that are not indigenous to Sonoma Coast SB such as Monterey cypress (*Cupressus macrocarpa*) and Monterey pine (*Pinus radiata*). Landscape plants have the potential to spread and displace native plant communities at Sonoma Coast SB. For instance, myoporum has spread into potential rare plant habitat at Goat Rock Beach (DPR 2002) as well as the occurrence of Monterey Cypress at Bodega Head.

Mixed Willow Series

Mixed willow riparian scrub occurs in drainage channels, roadside ditches, and other mesic areas at Sonoma Coast SB. It is typically dominated by one to several willow species including arroyo willow, sandbar willow (*Salix exigua*), and Sitka willow (*S. sitchensis*). The understory, if present, is composed of wetland species characteristic of the bulrush-cattail and sedge series. Mixed willow series often intergrades with red alder series, which is described below.

Red Alder Series

Red alder woodlands occur along creek banks and in many drainage channels at Sonoma Coast SB. The moderately dense canopy in this riparian plant community is dominated by

red alder (*Alnus rubra*). The open shrub layer can include willows (*Salix* spp.), California blackberry, and red elderberry (*Sambucus racemosa*). The understory varies from sparse to dense and is composed of herbaceous species such as basket sedge, bulrushes, rushes, sword fern, horsetails, and stinging nettle (*Urtica dioica*).

Redwood Series

Redwood trees (*Sequoia sempervirens*) comprise the sole or dominant species in the canopy in this series. The understory is sparse except in small openings, where characteristic species include California huckleberry (*Vaccinium ovatum*), redwood sorrel (*Oxalis oregona*), violet (*Viola* sp.), whipplevine (*Whipplea modesta*), California blackberry, strawberry (*Fragaia vesca*), hedge-nettle, sword fern, and thimbleberry (*Rubus parviflorus*). In some stands, Douglas-fir and tanoak are subdominant. In many areas, coast redwood and Douglas-fir are co-dominant, forming a two-tiered canopy. Other associated species in these transitional areas include bracken fern, California hazelnut (*Corylus cornuta* var. *californica*), and hedge-nettle.

Sand-verbena–Beach Bursage Series

This plant community occurs on sandy beaches and dunes at Sonoma Coast SB. It is most extensive in the Bodega Dunes, Wright's Beach, and Goat Rock Dunes areas. This plant community is dynamic because of the shifting substrate and is characterized by harsh growing conditions similar to those described earlier for the coastal bluff environment. Sand-verbena–beach bursage series is characterized by low-growing perennials adapted to high salinity, wind and sand blast, and sandy soils. Common species in this plant community include yellow sand-verbena (*Abronia latifolia*), sea rocket (*Cakile maritima*), beach morning-glory (*Calystegia soldanella*), beach bursage (*Ambrosia chamissonis*), coastal buckwheat, dune sagebrush (*Artemisia pycnocephala*), seashore bluegrass (*Poa douglasii*), seaside woolly sunflower, yellow bush lupine, and beach primrose (*Camissonia cheiranthifolia*).

Sedge Series

Sedge series occurs in meadows and wetlands that have developed in association with freshwater seeps, drainages, and natural depressions. It is dominated by sedges but may contain other associated herbaceous wetland species such as rushes and others listed above under bulrush-cattail series. Patches of sedges occur in scattered mesic areas in coastal prairie. Large expanses of sedges occur in marsh or swamp habitats, such as those associated with Willow Creek and Salmon Creek. The sedge series plant community qualifies as wetlands protected under §404 of the CWA.

Yellow Bush Lupine Series

This shrub-dominated plant community occurs on stabilized coastal dunes, bluffs, and terraces in the southern half of Sonoma Coast SB. It is characterized by a predominance of yellow bush lupine, but other shrubs such as coyote brush and heather goldenbush may occur as subdominant species in this series. On coastal bluffs, yellow bush lupine series intergrades

with coyote bush series. The understory varies in composition but often includes species from adjacent coastal prairie vegetation on coastal terraces. Understory herbs listed as characteristic species in this series include beach bursage, vernal grass (*Anthoxanthum odoratum*), ripgut brome, and California figwort (Sawyer and Keeler-Wolf 1995). This series is not endemic to this part of California and is encroaching on native series, similar to encroachment by European beachgrass and the iceplant series.

Special-status Plant Species

Special-status plants addressed in this document include those that are federally protected or that are otherwise considered sensitive by federal, state, or local resource conservation agencies and organizations. These include species that are State- and/or federally listed as rare, threatened, or endangered; those considered as candidates or proposed for listing; species identified by DFG and/or USFWS as species of concern; and plants included on the CNPS' lists.

A list of special-status plant species with potential to occur at Sonoma Coast SB was compiled by performing database searches of the CNPS' Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPS 2002) and DFG CNDDB (CNDDB 2002).

Forty-nine special-status plant species (including 1 lichen) have potential to occur at Sonoma Coast SB. Table 2-5 lists these species and provides information on their listing status, habitat, distribution, flowering period, and potential for occurrence. Locations of known special-status plant occurrences are shown in Exhibit 2-7. Descriptions of special-status plants that are federally or State-listed as endangered, threatened, or rare, that are known to occur at Sonoma Coast SB, are provided below. A total of 19 special-status plant species are known to occur at Sonoma Coast SB. These include: pink sand-verbena (*Abronia umbellata* ssp. *breviflora*), Blasdale's bent grass (*Agrostis blasdalei*), Franciscan onion (*Allium peninsulare* var. *franciscanum*), Sonoma alopecurus (*Alopecurus aequalis* var. *sonomensis*), Baker's manzanita (*Arctostaphylos bakeri* ssp. *bakeri*), California sedge (*Carex californica*), deceiving sedge (*C. saliniformis*), Sonoma spineflower (*Chorizanthe valida*), Baker's larkspur (*Delphinium bakeri*), yellow larkspur (*Delphinium luteum*), San Francisco wallflower (*Erysimum franciscanum*), short-leaved evax (*Hesperevax sparsiflora* var. *brevifolia*), Perennial goldfields (*Lasthenia macrantha* ssp. *macrantha*), Tidestrom's lupine (*Lupinus tidestromii*), Marin knotweed (*Polygonum marinense*), Marin checkerbloom (*Sidalcea hickmanii* ssp. *viridis*), purple-stemmed checkerbloom (*S. malvaeflora* ssp. *purpurea*), secund jewel-flower (*Streptanthus glandulosus* var. *hoffmanii*), and Showy Indian clover (*Trifolium amoenum*). No comprehensive parkwide special-status plant surveys have been conducted at Sonoma Coast SB to date (DPR, pers. comm., 2001).

Pink Sand-verbena

Pink sand-verbena (*Abronia umbellata* ssp. *breviflora*) is a federal Species of Local Concern and a CNPS List 1B species (plants rare, threatened, or endangered in California and

Table 2-5
Special-status Plant and Lichen Species known from or with Potential to Occur at Sonoma Coast State Beach

Species	Listing Status			Habitat	Distribution	Flowering Period	Potential for Occurrence in Study Area
	Fed.	State	CNPS				
Pink sand-verbena *Abronia umbellata* ssp. *breviflora*	--	--	1B	Coastal dunes	Extant in Del Norte, Humboldt, Mendocino, and Marin counties and Oregon; extirpated in Sonoma County	June–October	Present in the South Salmon Creek Beach area
Blasdale's bent grass *Agrostis blasdalei*	--	--	1B	Coastal bluff scrub, coastal dunes, and coastal prairie	Mendocino, Marin, Santa Cruz, and Sonoma counties	May–July	Present in multiple locations
Franciscan onion *Allium peninsulare* var. *franciscanum*	--	--	1B	Cismontane woodland, valley and foothill grassland; clay, often serpentinite substrate	Santa Clara, San Mateo, and Sonoma counties	May–July	Present on roadside ocean cliffs approximately 3 miles north of Bodega Bay
Sonoma alopecurus *Alopecurus aequalis* var. *sonomensis*	FE	--	1B	Freshwater marshes and swamps, riparian scrub	Marin and Sonoma counties	May–July	Potentially suitable habitat present
Napa false indigo *Amorpha californica* var. *napensis*	--	--	1B	Openings in broadleafed upland forest, chaparral, and cismontane woodland	Monterey, Marin, Napa, and Sonoma counties	April–July	Potentially suitable habitat present
Coast rock-cress *Arabis blepharophylla*	--	--	4	Broadleafed upland forest, coastal bluff scrub, coastal prairie, coastal scrub	Contra Costa, Monterey, Marin, Santa Cruz, San Francisco, San Mateo, and Sonoma counties	February–May	Potentially suitable habitat present
Baker's manzanita *Arctostaphylos bakeri* ssp. *bakeri*	--	CR	1B	Broadleafed upland forest and chaparral; often serpentinite substrate	Sonoma County	February–April	Potentially suitable habitat present
Bolander's reed grass *Calamagrostis bolanderi*	--	--	1B	Bogs and fens, meadows, freshwater marshes and swamps, coastal scrub, openings in mesic forest	Humboldt, Mendocino, and Sonoma counties	May–August	Potentially suitable habitat present

Table 2-5
Special-status Plant and Lichen Species known from or with Potential to Occur at Sonoma Coast State Beach

Species	Listing Status			Habitat	Distribution	Flowering Period	Potential for Occurrence in Study Area
	Fed.	State	CNPS				
Thurber's reed grass *Calamagrostis crassiglumis*	--	--	2	Mesic sites in coastal scrub, freshwater marshes and swamps	Del Norte, Humboldt, Mendocino, Marin, and Sonoma counties; Washington; widespread outside of California	May–July	Potentially suitable habitat present
Coastal bluff morning-glory *Calystegia purpurata* ssp. *saxicola*	--	--	1B	Coastal dunes and coastal scrub	Mendocino, Marin, and Sonoma counties	May–August	Potentially suitable habitat present
Swamp harebell *Campanula californica*	--	--	1B	Bogs and fens, freshwater marshes and swamps, mesic sites in closed-cone coniferous forest, coastal prairie, meadows, and North Coast coniferous forest	Extant in Mendocino, Marin, and Sonoma counties; extirpated in Santa Cruz County	June–October	Potentially suitable habitat present
California sedge *Carex californica*	--	--	2	Bogs and fens, moist areas in closed-cone coniferous forest, coastal prairie, meadows, margins of marshes and swamps	Mendocino and Sonoma counties, Idaho, Oregon, Washington, and other states	May–August	Historically documented from Bodega Head
Bristly sedge *Carex comosa*	--	--	2	Coastal prairie, marshes and swamps, valley and foothill grassland, lake margins	Extant in Contra Costa, Lake, Mendocino, Shasta, San Joaquin, and Sonoma counties, Idaho, and Washington; widespread outside of California; extirpated in San Bernardino, Santa Cruz, San Francisco counties, and Oregon	May–September	Potentially suitable habitat present
Deceiving sedge *Carex saliniformis*	--	--	1B	Mesic sites in coastal prairie, coastal scrub, meadows, coastal salt marshes, and swamps	Extant in Humboldt, Mendocino, and Sonoma counties; extirpated in Santa Cruz County	June	Present near Russian Gulch and Meyers Grade, between SR 1 and the ocean

Table 2-5
Special-status Plant and Lichen Species known from or with Potential to Occur at Sonoma Coast State Beach

Species	Listing Status			Habitat	Distribution	Flowering Period	Potential for Occurrence in Study Area
	Fed.	State	CNPS				
San Francisco bay spineflower *Chorizanthe cuspidata* var. *cuspidata*	--	--	1B	Coastal bluff scrub, coastal dunes, coastal prairie, coastal scrub; sandy soils	Extant in Marin, Santa Clara, San Francisco, San Mateo, Sonoma counties; extirpated in Alameda County	April–August	Potentially suitable habitat present
Woolly-headed spineflower *Chorizanthe cuspidata* var. *villosa*	--	--	1B	Coastal dunes, coastal prairie, coastal scrub; sandy soils	Marin and Sonoma Counties	May–August	Potentially suitable habitat present
Sonoma spineflower *Chorizanthe valida*	FE	CE	1B	Coastal prairie; sandy soils	Extant in Marin County, extirpated in Sonoma County	June–August	Potentially suitable habitat present; last recorded from Fort Ross area; may be extinct in Sonoma County
Franciscan thistle *Cirsium andrewsii*	--	--	1B	Broadleafed upland forest, coastal bluff scrub, coastal prairie, coastal scrub; mesic sites, sometimes serpentinite substrate	Extant in Contra Costa, Marin, San Francisco, and Sonoma counties; extirpated in San Mateo County	March–July	Potentially suitable habitat present
Round-headed chinese houses *Collinsia corymbosa*	--	--	1B	Coastal dunes, coastal strand	Extant in Humboldt, Mendocino, Marin and Sonoma counties; extirpated in San Francisco County	April–June	Potentially suitable habitat present
Point Reyes bird's-beak *Cordylanthus maritimus* ssp. *palustris*	--	--	1B	Coastal salt marshes and swamps	Extant in Humboldt, Marin, and Sonoma counties, and Oregon; extirpated in Alameda, Santa Clara, and San Mateo counties	June–October	Potentially suitable habitat present
Baker's larkspur *Delphinium bakeri*	FE	CR	1B	Coastal scrub, valley and foothill grassland	Extant in Marin County; extirpated in Sonoma County	March–May	Suitable habitat may be present
Yellow larkspur *Delphinium luteum*	FE	CR	1B	Chaparral, coastal prairie, coastal scrub; rocky sites	Marin and Sonoma counties	March–May	Suitable habitat may be present

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Species	Listing Status			Habitat	Distribution	Flowering Period	Potential for Occurrence in Study Area
	Fed.	State	CNPS				
Western leatherwood *Dirca occidentalis*	--	--	1B	Broadleafed upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, North Coast coniferous forest, riparian forest and woodland; mesic slopes of rocky hills	Sonoma County	January–April	Potentially suitable habitat present
Streamside daisy *Erigeron biolettii*	--	--	3	Broadleafed upland forest, cismontane woodland, North Coast coniferous forest; rocky, mesic sites	Humboldt, Mendocino, Marin, Napa, Solano, and Sonoma counties	June–September	Potentially suitable habitat present
Supple daisy *Erigeron supplex*	--	--	1B	Coastal bluff scrub and coastal prairie	Extant in Mendocino and Sonoma counties; extirpated in Humboldt and Marin counties	May–July	Potentially suitable habitat present
San Francisco wallflower *Erysimum franciscanum*	--	--	4	Chaparral, coastal dunes, coastal scrub, valley and foothill grassland; often serpentinite or granitic substrates	Marin, Santa Clara, Santa Cruz, San Francisco, San Mateo, and Sonoma counties	March–June	Present in coastal dunes behind north Goat Rock restroom
Coast fawn lily *Erythronium revolutum*	--	--	2	Bogs and fens, broadleafed upland forest, North Coast coniferous forest; mesic sites, streambanks	Del Norte, Humboldt, Mendocino, Siskiyou, and Sonoma counties; Oregon, Washington, and other states	March–June	Potentially suitable habitat present
Dune gilia *Gilia capitata* ssp. *chamissonis*	--	--	1B	Coastal dunes, coastal scrub	Marin, San Francisco, Sonoma counties	April–July	Present in coastal dunes at Goat Rock
Woolly-headed gilia *Gilia capitata* ssp. *tomentosa*	--	--	1B	Coastal bluff scrub; rocky outcrops	Marin and Sonoma counties	May–July	Potentially suitable habitat present
Dark-eyed gilia *Gilia millefoliata*	--	--	1B	Coastal dunes, coastal strand	Extant in Del Norte, Humboldt, Mendocino, Marin, and Sonoma counties and Oregon; extirpated in San Francisco County	April–July	Potentially suitable habitat present

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Special-status Plant and Lichen Species known from or with Potential to Occur at Sonoma Coast State Beach

Species	Listing Status			Habitat	Distribution	Flowering Period	Potential for Occurrence in Study Area
	Fed.	State	CNPS				
Hayfield tarplant *Hemizonia congesta* ssp. *leucocephala*	--	--	3	Coastal scrub, valley and foothill grassland	Mendocino, Marin, and Sonoma counties	April–October	Potentially suitable habitat present
Short-leaved evax *Hesperevax sparsiflora* var. *brevifolia*	--	--	2	Sandy sites in coastal scrub, coastal dunes	Extant in Humboldt, Mendocino, Marin, Santa Cruz, and Sonoma counties, and Oregon; extirpated in San Francisco County	March–June	Present in multiple locations
Point Reyes horkelia *Horkelia marinensis*	--	--	1B	Coastal dunes, coastal prairie, coastal scrub; sandy substrates	Mendocino, Marin, Santa Cruz, and San Mateo counties	May–September	Potentially suitable habitat present
Baker's goldfields *Lasthenia macrantha* ssp. *bakeri*	--	--	1B	Openings in closed-cone coniferous forest, coastal scrub	Extant in Mendocino and Marin counties; extirpated in Sonoma County	April–October	Possibly present in multiple locations, needs further analysis because of possible hybridization
Perennial goldfields *Lasthenia macrantha* ssp. *macrantha*	--	--	1B	Coastal bluff scrub, coastal dunes, coastal scrub	Mendocino, Marin, San Luis Obispo, San Mateo, and Sonoma counties	January–November	Present in multiple locations
Woolly-headed lessingia *Lessingia hololeuca*	--	--	3	Broadleafed upland forest, coastal scrub, lower montane coniferous forest, valley and foothill grassland; clay, serpentinite substrates	Alameda, Monterey, Marin, Napa, Santa Clara, San Mateo, Solano, Sonoma, and Yolo counties	June–October	Potentially suitable habitat present
Coast lily *Lilium maritimum*	--	--	1B	Broadleafed upland forest, closed-cone coniferous forest, coastal prairie, coastal scrub, freshwater marshes and swamps, North Coast coniferous forest	Extant in Mendocino, Marin, San Francisco, and Sonoma counties; extirpated in San Mateo County	May–July	Potentially suitable habitat present

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Species	Listing Status			Habitat	Distribution	Flowering Period	Potential for Occurrence in Study Area
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San Mateo tree lupine *Lupinus eximius* (syn. *L. arboreus* var. *eximius*)	--	--	3	Chaparral, coastal scrub	San Mateo and Sonoma counties	April–July	Potentially suitable habitat present
Tidestrom's lupine *Lupinus tidestromii*	FE	CE	1B	Coastal dunes	Monterey, Marin, and Sonoma counties	April–July	Present in coastal strand behind north restroom at Goat Rock Beach
Curly-leaved monardella *Monardella undulata*	--	--	4	Closed-cone coniferous forest, chaparral, coastal dunes, coastal prairie, coastal scrub, Ponderosa pine sandhills; sandy soils	Monterey, Marin, Santa Barbara, Santa Cruz, San Francisco, San Luis Obispo, San Mateo, and Sonoma counties	May–September	Potentially suitable habitat present
Robust monardella *Monardella villosa* ssp. *globosa*	--	--	1B	Coastal scrub, cismontane woodland, openings in chaparral	Alameda, Contra Costa, Humboldt, Lake, Mendocino, Napa, San Mateo, and Sonoma counties	June–July	Potentially suitable habitat present
Marin knotweed *Polygonum marinense*	--	--	3	Coastal salt or brackish marshes and swamps	Marin, Napa, Solano, and Sonoma counties	April–October	Present north of Bodega Head
Point Reyes checkerbloom *Sidalcea calycosa* ssp. *rhizomata*	--	--	1B	Coastal freshwater marshes and swamps	Mendocino, Marin, and Sonoma counties	April–September	Potentially suitable habitat present
Marin checkerbloom *Sidalcea hickmanii* ssp. *viridis*	--	--	1B	Chaparral; serpentinite substrate	Marin, Napa, San Mateo, and Sonoma counties	May–June	Present at Russian Gulch
Purple-stemmed checkerbloom *Sidalcea malviflora* ssp. *purpurea*	--	--	1B	Broadleafed upland forest, coastal prairie	Mendocino, Marin, San Mateo, and Sonoma counties	May	Present in multiple locations
Beach starwort *Stellaria littoralis*	--	--	4	Bogs and fens, coastal bluff scrub, coastal dunes, coastal scrub, marshes and swamps, coastal prairie; mesic sites	Extant in Humboldt, Marin, San Francisco, Sonoma counties; extirpated in Mendocino County	March–July	Potentially suitable habitat present

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Species	Listing Status			Habitat	Distribution	Flowering Period	Potential for Occurrence in Study Area
	Fed.	State	CNPS				
Secund jewel-flower *Streptanthus glandulosus* var. *hoffmanii*	--	--	1B	Chaparral, cismontane woodland, valley and foothill grassland; rocky sites, often serpentinite substrate	Sonoma County	March–July	Present on steep rocky slopes above Russian Gulch
Showy Indian clover *Trifolium amoenum*	FE	--	1B	Coastal bluff scrub, valley and foothill grassland; sometimes serpentinite substrate	Extant in Marin and Sonoma counties; extirpated in Alameda, Napa, Santa Clara, and Solano counties	April–June	Potentially suitable habitat present
Long-beard lichen *Usnea longissima*	--	SP	*	Coastal montane coniferous forest; mesic sites	Northern California (Del Norte, Humboldt, and Sonoma counties) to Alaska, Scandinavia, and Eastern Europe	N/A	Potentially suitable habitat present

Notes/acronyms:
U.S. Fish and Wildlife Service (USFWS) Federal Listing Categories:
FC = Federal Candidate
FE = Federal Endangered

California Department of Fish and Game (DFG) State Listing Categories:
CE = California Endangered
CT = California Threatened
CR = California Rare
SP = Included on Special Plants List but no official listing status (DFG 2002)

California Native Plant Society (CNPS) Listing Categories:
1B = Plants rare, threatened, or endangered in California and elsewhere
2 = Plants rare, threatened, or endangered in California but more common elsewhere
3 = Plants about which we need more information–a review list
4 = Plants of limited distribution–a watch list
* = Included on California Lichen Society's Red List; California Lichen Society recommends a CNPS listing of 1B.

Source: NDDB 2002, CNPS 2002, Potential for Occurrence is based on information contained in the Sonoma Coast State Beach IS/MND (DPR 2001)